

**CENTRE FOR ENVIRONMENT, FISHERIES & AQUACULTURE SCIENCE**  
**LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND**  
**2013 RESEARCH VESSEL PROGRAMME**

PROGRAMME: RV CEFAS ENDEAVOUR: CRUISE 10/13

PROJECT: MB003N

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CLAIRE POWELL (DP342)

JON ELSON (DP342)

DURATION: 08 – 17 June

LOCALITY: North Sea (English NE)

**AIMS:**

**Primary objective (all stations):**

1. To conduct a standard underwater TV survey of *Nephrops* burrow densities on the Farn Deeps grounds, 55° 35' - 54° 45' N and 1° 30' - 0° 40' W, and to evaluate *Nephrops* abundance (110 stations).

**Secondary objectives (only in selected stations ~ 90 stations):**

2. To conduct seabed multibeam survey at and between TV survey stations.
3. To conduct seabed sediment sampling, using a day-grab.
4. To use the sediment profile imagery (SPI) camera to take cross section photographs of soft sediment.

## PLAN:

CEFAS ENDEAVOUR will sail on 8<sup>th</sup> June from Lowestoft and will return to the same port on 17<sup>th</sup> June, 2013.

Video data will be collected from cameras mounted on a towed sledge. On the Farn Deeps grounds, 110 stations will be visited (80 priority 1 stations; 8 priority 2 stations; 17 priority 3 stations and 5 priority 4) with the aim of recording a clear 10 minute continuous video transect of the sea bed at each station (Figure 1).

All video will be analysed and the counts confirmed at sea. Data will be entered and QC onboard.

Additionally, complementary information will be collected. DP342 – Better value for money: integration of approaches in support of *Nephrops* assessments.

This survey design aims at fitting the geo spatial model, so the dependent variable will be *Nephrops* density and the covariates the redox, backscatter and sediment. This is an exploratory study to check if these variables can be used to increase confidence in the *Nephrops* abundance estimates and if they can be used as predictors in the model.

Out of 110 stations 90 were selected to do the full coverage with all gears (TV sledge, day grab, SPI and multibeam coverage). The selection of the stations was made in order to use the geostatistical model that has been used to calculate the *Nephrops* abundance.

**TV sledge:** The sledge will be towed (0.7 Knot) against the tide and 10 minutes of good footage will be recorded. This corresponds to ~ 200m of track.

Start always with TV sledge, if no footage recorded, nothing else will be recorded.

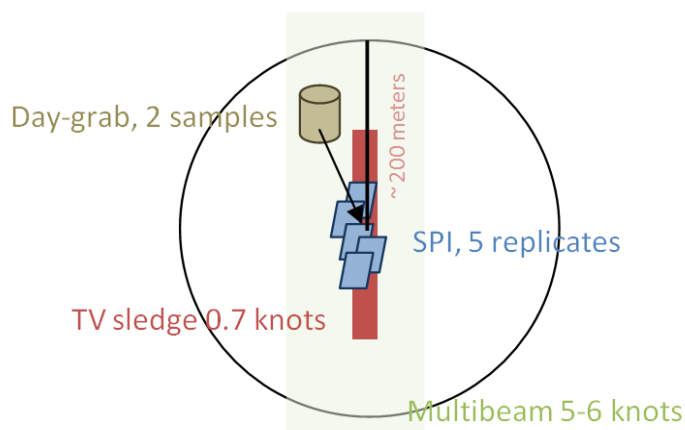
**Day grab:** The vessel will turn around and go approximately to the middle of the track. Deployments of the day grab using DP (side gantry). Take fix.

On the deck:

- photo of the sediment collected (with label)
- scoop the first 2 cm of the sediment , place it in a plastic bag already labelled, put the sample in a box and freeze it (sample for PSA and OM)
- sample with a syringe, place the sediment in a tube labelled and put it in the fridge (sample for rapid fine assessment analysis)

**SPI:** deployments of SPI using the side gantry. 5 replicates using DP. Leave the vessel drift few meters in between dips. Take fix for each dip. Claire will verify quality of images.

**Multibeam:** Change to side gantry. Multibeam has to cover the TV track and cross both sides of the ring. Multibeam needs to run slightly off set (~ 50m, speed 5 to 6 knots).



ANA LEOCADIO  
(Scientist-in-Charge)

31 May 2013

# CEnd 10/13 - Farn Deeps (FU6)

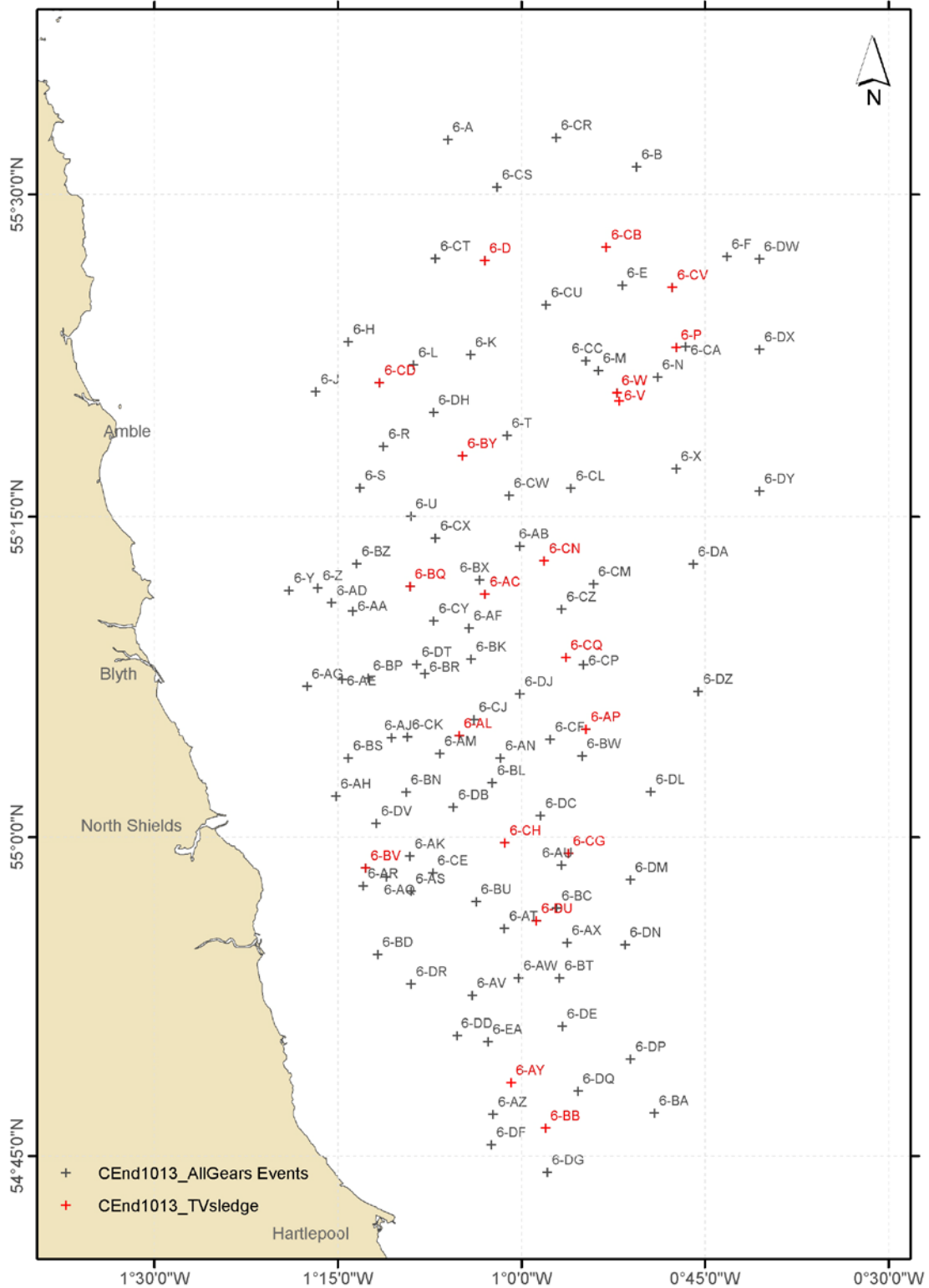


Figure 1 - CEnd10/13 final stations for Farn Deeps area (FU6). Red stations: TV sledge only; Grey Stations: Full coverage with all gears (TV sledge + day grab + SPI + multibeam).

**Table 1 – CEND10/13 station for the Farn Deeps area.**

<b>TVID</b>	<b>LatD</b>	<b>LatM</b>	<b>LongD</b>	<b>LongM</b>	<b>DecLat</b>	<b>DecLong</b>	<b>Priority</b>
6-A	55	32.5405	-1	5.9825	55.5423	-1.0997	1
6-B	55	31.2705	0	50.5360	55.5212	-0.8423	1
6-D	55	26.9245	-1	2.9665	55.4487	-1.0494	1
6-E	55	25.7660	0	51.7270	55.4294	-0.8621	1
6-F	55	27.1150	0	43.1660	55.4519	-0.7194	1
6-H	55	23.1485	-1	14.1080	55.3858	-1.2351	1
6-J	55	20.8195	-1	16.7730	55.3470	-1.2795	1
6-K	55	22.5425	-1	4.1145	55.3757	-1.0686	1
6-L	55	22.0750	-1	8.7700	55.3679	-1.1462	1
6-M	55	21.8065	0	53.6600	55.3634	-0.8943	1
6-N	55	21.5175	0	48.8390	55.3586	-0.8140	1
6-P	55	22.8875	0	47.3105	55.3815	-0.7885	1
6-R	55	18.2770	-1	11.2245	55.3046	-1.1871	1
6-S	55	16.3355	-1	13.1550	55.2723	-1.2193	1
6-T	55	18.7905	-1	1.1415	55.3132	-1.0190	1
6-U	55	15.0270	-1	9.0000	55.2504	-1.1500	1
6-V	55	20.3955	0	51.9600	55.3399	-0.8660	1
6-W	55	20.7640	0	52.1560	55.3461	-0.8693	1
6-X	55	17.2445	0	47.3120	55.2874	-0.7885	1
6-Y	55	11.5520	-1	18.9570	55.1925	-1.3160	1
6-Z	55	11.6655	-1	16.5930	55.1944	-1.2766	1
6-AA	55	10.5855	-1	13.7555	55.1764	-1.2293	1
6-AB	55	13.6265	-1	0.0930	55.2271	-1.0016	1
6-AC	55	11.3755	-1	2.9350	55.1896	-1.0489	1
6-AD	55	10.9925	-1	15.4685	55.1832	-1.2578	1
6-AE	55	7.3930	-1	14.6260	55.1232	-1.2438	1
6-AF	55	9.7795	-1	4.2470	55.1630	-1.0708	1
6-AG	55	7.0760	-1	17.4725	55.1179	-1.2912	1
6-AH	55	1.9165	-1	15.1320	55.0319	-1.2522	1
6-AJ	55	4.6500	-1	10.5700	55.0775	-1.1762	1
6-AK	54	59.1040	-1	9.0790	54.9851	-1.1513	1
6-AL	55	4.7580	-1	5.0480	55.0793	-1.0841	1
6-AM	55	3.9190	-1	6.6260	55.0653	-1.1104	1
6-AN	55	3.7155	-1	1.6815	55.0619	-1.0280	1
6-AP	55	5.0640	0	54.6885	55.0844	-0.9115	1
6-AQ	54	58.1145	-1	11.0145	54.9686	-1.1836	1
6-AR	54	57.7100	-1	12.9065	54.9618	-1.2151	1
6-AS	54	57.4505	-1	9.0015	54.9575	-1.1500	1
6-AT	54	55.7030	-1	1.3515	54.9284	-1.0225	1
6-AU	54	58.6765	0	56.6800	54.9779	-0.9447	1
6-AV	54	52.5465	-1	3.9710	54.8758	-1.0662	1
6-AW	54	53.3690	-1	0.1850	54.8895	-1.0031	1
6-AX	54	55.0255	0	56.2345	54.9171	-0.9372	1
6-AY	54	48.4275	-1	0.8005	54.8071	-1.0133	1
6-AZ	54	46.9490	-1	2.2800	54.7825	-1.0380	1
6-BA	54	46.9985	0	49.0960	54.7833	-0.8183	1

6-BB	54	46.2940	0	57.9900	54.7716	-0.9665	1
6-BC	54	56.6560	0	57.0660	54.9443	-0.9511	1
6-BD	54	54.4800	-1	11.7040	54.9080	-1.1951	1
6-BK	55	8.3505	-1	4.0680	55.1392	-1.0678	1
6-BL	55	2.5395	-1	2.3485	55.0423	-1.0391	1
6-BN	55	2.1020	-1	9.3845	55.0350	-1.1564	1
6-BP	55	7.4605	-1	12.4680	55.1243	-1.2078	1
6-BQ	55	11.7365	-1	9.0545	55.1956	-1.1509	1
6-BR	55	7.6645	-1	7.8575	55.1277	-1.1310	1
6-BS	55	3.7130	-1	14.1035	55.0619	-1.2351	1
6-BT	54	53.3655	0	56.8425	54.8894	-0.9474	1
6-BU	54	56.9725	-1	3.6540	54.9495	-1.0609	1
6-BV	54	58.5370	-1	12.6950	54.9756	-1.2116	1
6-BW	55	3.7895	0	54.9875	55.0632	-0.9165	1
6-BX	55	12.0335	-1	3.3930	55.2006	-1.0565	1
6-BY	55	17.8435	-1	4.7670	55.2974	-1.0794	1
6-BZ	55	12.8030	-1	13.4300	55.2134	-1.2238	1
6-CA	55	22.9280	0	46.5375	55.3821	-0.7756	1
6-CB	55	27.5395	0	53.0340	55.4590	-0.8839	1
6-CC	55	22.2735	0	54.6865	55.3712	-0.9114	1
6-CD	55	21.2535	-1	11.5550	55.3542	-1.1926	1
6-CE	54	58.3090	-1	7.2080	54.9718	-1.1201	1
6-CF	55	4.5760	0	57.5980	55.0763	-0.9600	1
6-CG	54	59.2270	0	56.1380	54.9871	-0.9356	1
6-CH	54	59.7265	-1	1.3170	54.9954	-1.0220	1
6-CJ	55	5.5165	-1	3.8465	55.0919	-1.0641	1
6-CK	55	4.7055	-1	9.2940	55.0784	-1.1549	1
6-CL	55	16.3350	0	55.9150	55.2722	-0.9319	1
6-CM	55	11.8550	0	54.0750	55.1976	-0.9013	1
6-CN	55	12.9350	0	58.1000	55.2156	-0.9683	1
6-CP	55	8.0800	0	54.8800	55.1347	-0.9147	1
6-CQ	55	8.4150	0	56.3200	55.1402	-0.9387	1
6-CR	55	32.6215	0	57.1150	55.5437	-0.9519	2
6-CS	55	30.3300	-1	1.9465	55.5055	-1.0324	2
6-CT	55	27.0125	-1	6.9910	55.4502	-1.1165	1
6-CU	55	24.8635	0	57.9310	55.4144	-0.9655	2
6-CV	55	25.6790	0	47.6245	55.4280	-0.7937	2
6-CW	55	15.9795	-1	0.9605	55.2663	-1.0160	3
6-CX	55	14.0000	-1	6.9850	55.2333	-1.1164	2
6-CY	55	10.1215	-1	7.1140	55.1687	-1.1186	3
6-CZ	55	10.6740	0	56.6820	55.1779	-0.9447	3
6-DA	55	12.7935	0	45.9230	55.2132	-0.7654	3
6-DB	55	1.4035	-1	5.5210	55.0234	-1.0920	2
6-DC	55	0.9965	0	58.3980	55.0166	-0.9733	3
6-DD	54	50.6505	-1	5.2015	54.8442	-1.0867	3
6-DE	54	51.1000	0	56.6280	54.8517	-0.9438	3
6-DF	54	45.5120	-1	2.4110	54.7585	-1.0402	3
6-DG	54	44.2030	0	57.8560	54.7367	-0.9643	3
6-DH	55	19.8625	-1	7.1260	55.3310	-1.1188	1

<b>6-DJ</b>	55	6.7000	-1	0.0835	55.1117	-1.0014	3
<b>6-DL</b>	55	2.1165	0	49.3725	55.0353	-0.8229	3
<b>6-DM</b>	54	57.9890	0	51.0605	54.9665	-0.8510	3
<b>6-DN</b>	54	54.9440	0	51.4915	54.9157	-0.8582	2
<b>6-DP</b>	54	49.5390	0	51.0360	54.8257	-0.8506	3
<b>6-DQ</b>	54	48.0295	0	55.3390	54.8005	-0.9223	3
<b>6-DR</b>	54	53.0750	-1	8.9700	54.8846	-1.1495	3
<b>6-DT</b>	55	8.1025	-1	8.5145	55.1350	-1.1419	3
<b>6-DU</b>	54	56.0585	0	58.7305	54.9343	-0.9788	2
<b>6-DV</b>	55	0.6380	-1	11.8270	55.0106	-1.1971	3
<b>6-DW</b>	55	27.0000	0	40.5000	55.4500	-0.675	4
<b>6-DX</b>	55	22.8000	0	40.5000	55.3800	-0.675	4
<b>6-DY</b>	55	16.2000	0	40.5000	55.2700	-0.675	4
<b>6-DZ</b>	55	6.8311	0	45.5009	55.1139	-0.758348	4
<b>6-EA</b>	54	50.3640	-1	2.6958	54.8394	-1.04493	4